

REMARKS

This is in response to the Office Action dated May 29, 2008. Claims 1-26 are pending. Claims 1-22 stand rejected in the outstanding Office Action. Claims 1, 5-7, 16 and 19-22 have been amended. Claims 23-26 have been added.

Applicant thanks the Examiner for the consideration of the Information Disclosure Statements filed December 17, 2007.

The rejection of claim 1 under 35 U.S.C. §103(a), as allegedly being unpatentable over Kurematsu (US 5,101,279), which corresponds to JP 03-184019, in view of Colgan et al. (US 2003/0214615), is respectfully traversed.

Amended claim 1 recites now “the backlight irradiates the micro lens array with light that is higher in directivity at an angle of irradiation along the first direction than at an angle of irradiation along the second direction”. Neither of Kurematsu or Colgan teaches this limitation. Support for the limitation (also in claims 19 and 20) can be found in page 15, line 24 to page 16, line 7 of the specification.

Kurematsu discloses an LCD device, wherein a lenticular lens sheet 10 is disposed on one side of the display device (4, 5, 6), Fig. 2. The LCD comprises an array of pixels 2 (Fig. 1). Kurematsu labels the direction parallel to “a” as the transverse direction, and the direction parallel to “c” as the longitudinal direction (col. 3, lines 18-19). In one embodiment, the lenticular lens sheet is disposed so that the axes of the cylindrical lenses 10a extend in the longitudinal direction of the device (col. 3, lines 38-40). In this case, Kurematsu teaches that the lens effect is produced in the transverse direction of the device, i.e., the directivity of light is greater along the transverse direction (col. 3, lines 41-42).

Colgan discloses an LCD device, wherein a lenticular lens sheet 5 is disposed on one side

of an LCD panel 4 (Fig. 1, [0048]-[0049]). The lenticular lens sheet 5 comprises a plurality of cylindrical lenses 52. The LCD panel comprises an array of pixels 43 (Fig. 2, [0051]). In one embodiment, each lens 52 extends along the short side of the pixel 43 (Fig. 4, [0052]). In another embodiment, Colgan teaches that the lenses 52 can be formed corresponding to the row of the pixels 43 along the long sides thereof ([0074]). Furthermore, Colgan teaches that the pitch along the lines 42 is 1/3 of the pitch along the lines 41. It appears that Colgan teaches an arrangement for the lenticular lenses where the lens effect is along the direction which has the longer pitch, i.e., along the longer sides of pixels 43 (even though Colgan says that it is not the preferable embodiment, see [0074]).

According to the amended claim 1, the light whose directivity along the two directions is controlled, is limited to the light emitted from the back light and yet to reach the micro lens array (see, for example, page 18, line 22 to page 19, line 4 and Fig. 7 in the specification). This is not taught in Kurematsu or Colgan, where the higher directivity along one direction compared to the other direction is achieved when the light passes through the micro lenses. For example, Kurematsu teaches “The lenticular lens sheet 10 is bonded to the surface of the glass substrate 5..., so that the lens effect is produced in the traverse direction of the device”, col. 3, lines 37-43. Colgan teaches, for example, “Each lens 52 of the lenticular lens sheet 5 is designed to focus on the liquid crystal layer of the liquid crystal display panel 4 when a parallel light is projected”, [0052]). The novel arrangement of claim 1, which is different from Kurematsu or Colgan, brings about an unanticipated effect of improving frontal brightness and increasing brightness over a wide range of viewing angles (directivities). Therefore, the arrangement of amended claim 1 is not obvious over the combination of Kurematsu and Colgan.

For the above reasons, claim 1 is allowable.

Independent claims 16, 19-22 recite similar limitations as claim 1, and it is respectfully submitted that they are allowable.

Support for the amendments of claims 16, 21-22, can be found in lines 11-13 on page 15 and Fig. 3 of the specification.

Support for the new claims 23-26 can be found, for example, in page 15, lines 11-13, Fig. 3 (claim 23); page 17, line 15 to page 20, line 6, Figs. 6(a) and 6(b) (claim 24); page 25, line 19 to page 26, line 18, Figs. 10(a) and 10(b) (claim 25); page 15, line 24 to page 16, line 7, Fig. 1 (claim 26).

It is respectfully requested that claims 2-15, 17-18, 23-26, each dependent from claim 1, or 16, also be deemed allowable.

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly solicited.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: /Leonidas Boutsikaris/
Leonidas Boutsikaris, Ph.D.
Reg. No. 61,377

LB:tlm
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100